AMENDMENTS TO THE CLAIMS:

Kindly amend claims 2, 4-5, 7, 9, 15, 18, 21-22, 24-25, 27, 31, 33-35, and 37 as follows:

Listing of Claims:

1. (canceled)

2. (currently amended) A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the mesh representations having a limit surface, and the limit surface having a shape, the method comprising the following steps:

subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

determining locations of the vertices of the child polygons;

maintaining boundary vertices of the child polygons on one or more of the boundary curves; and

associating one or more detail vectors with [[one or more]] corresponding vertices of the child polygons, at least one detail vector representing the shape of the limit surface at a point corresponding to the associated vertex.

3. (previously presented) The method of claim 2 further comprising adjusting the locations of one or more vertices of child polygons using the detail vectors.

4. (currently amended) The method of claim 2 further comprising ~~A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:~~

~~subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;~~

~~determining locations of the vertices of the child polygons;~~

~~maintaining boundary vertices of the child polygons on one or more of the boundary curves; and~~

subdividing the second mesh representation one or more times until any error between it and the object surface is less than a prescribed tolerance value.

5. (currently amended) The method of claim 2 wherein the determining step further comprises ~~A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:~~

~~subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;~~

determining locations of the vertices of the child polygons, including determining the location of an interior vertex in the second mesh representation by weighting the locations of adjacent vertices in the first mesh representation, and adding the weighted locations~~; and~~

~~maintaining boundary vertices of the child polygons on one or more of the boundary curves~~.

6. (previously presented) A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:

subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

determining locations of the vertices of the child polygons, including determining the location of a corner vertex in the second mesh representation by setting it to the location of the corner vertex in the first mesh representation; and

maintaining boundary vertices of the child polygons on one or more of the boundary curves.

7. (currently amended) The method of claim 2 wherein the determining step further comprises ~~A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:~~

~~subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;~~

~~determining locations of the vertices of the child polygons, including~~ determining the location of a boundary vertex in the second mesh representation by determining one or more parameters of a boundary curve corresponding to adjacent vertices in the first mesh representation, weighting the one or more parameters, and adding the weighted parameters to determine a parameter for the boundary vertex~~; and~~

~~maintaining boundary vertices of the child polygons on one or more of the boundary curves~~.

8. (original) The method of claim 7 further comprising determining the location of the boundary vertex from the parameter of the boundary vertex.

9. (currently amended) A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:

subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

determining locations of the vertices of the child polygons;

maintaining boundary vertices of the child polygons on one or more of the boundary curves;

associating detail vectors with corresponding vertices of the child polygons; and

applying one or more of the detail vectors to adjust the locations of one or more of the vertices of the child polygons in the second subdivided mesh representation.

10. (previously presented) The method of claim 2 wherein said determining step includes determining the location of an interior even vertex by weighting the locations of the interior even vertex and its adjacent vertices in the first mesh representation, and adding the weighted locations.

11. (previously presented) The method of claim 2 wherein said determining step includes determining the location of an interior odd vertex by weighting the locations of adjacent vertices in the first mesh representation, and adding the weighted locations.

12. (previously presented) The method of claim 2 wherein said determining step includes determining the location of an interior vertex adjacent to a corner vertex by weighting the locations of adjacent vertices in the first mesh representation, adding the weighted locations, and deriving the location of the interior vertex from the weighted sum.

13. (previously presented) The method of claim 2 wherein said determining step includes determining a parameter of an even boundary vertex on a boundary curve by determining parameters for the even boundary vertex and adjacent vertices in the first mesh representation, weighting the parameters, and adding the weighted parameters.

14. (previously presented) The method of claim 2 wherein said determining step includes determining a parameter of an odd boundary vertex on a boundary curve by determining parameters for adjacent vertices in the first mesh representation, and adding the weighted parameters.

15. (currently amended) ~~The method of claim 2 wherein said determining step includes~~ A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation

comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the mesh representations having a limit surface, and the limit surface having a shape, the method comprising the following steps:

subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

determining locations of the vertices of the child polygons including determining a parameter of a corner vertex on a boundary curve by setting it to the parameter corresponding to the corner vertex in the first mesh representation;

maintaining boundary vertices of the child polygons on one or more of the boundary curves;

associating detail vectors with one or more corresponding vertices of the child polygons.

16. (previously presented) The method of claim 2 wherein said associating step comprises propagating detail vectors from vertices in the first mesh representation to vertices in the second mesh representation.

17. (previously presented) The method of claim 2 wherein said associating step comprises importing detail vectors from another source.

18. (currently amended) A representation of an object surface tangibly embodied in a processor readable medium resulting from performing any of the methods of claims 2, 3 and 4.

19. (previously presented) A memory tangibly embodying any of the methods of claims 2, 3 and 4.

20. (previously presented) A processor readable medium tangibly embodying any of the methods of claims 2, 3 and 4.

21. (currently amended) A representation of an object surface tangibly embodied in a processor readable medium bounded by one or more boundary curves comprising:

a mesh representation comprising a mesh of polygons, with boundary vertices thereof located on or more of the boundary curves, the mesh representation having a limit surface, and the limit surface having a shape; and

detail vectors corresponding to one or more polygon vertices which converge to limit points on the limit surface, wherein a detail vector for a vertex ~~relates to~~ represents the shape of the limit surface near the limit point corresponding to the vertex.

22. (currently amended) The representation of claim 21 wherein a detail vector for a vertex [[relates to]]represents the second derivative of the limit surface near the limit point corresponding to the vertex.

23. (original) The representation of claim 21 wherein the mesh representation comprises a mesh of subdivided or repeatedly subdivided polygons.

24. (currently amended) The ~~A memory tangibly embodying the~~ surface representation of claim 21 wherein the medium comprises a memory.

25. (currently amended) The surface representation of claim 24 wherein the memory is selected from the group comprising hard disk, floppy disk, RAM, ROM, EPROM, EEPROM, PROM, flash memory, volatile memory, read/write memory, non-volatile memory, CD-ROM and DVD~~A processor readable medium tangibly embodying the surface representation of claim 21~~.

26. (original) A system comprising:

the processor readable medium of claim 20; and

a processor configured to perform the method tangibly embodied by the processor readable medium.

27. (currently amended) A system comprising:

the processor readable medium of claim 21~~25~~; and

a processor configured to access the surface representation tangibly embodied by the processor readable medium.

28. (original) The system of claim 26 further comprising a CAD device for providing to the processor the first mesh representation or data from which this first mesh representation is derived.

29. (original) The system of claim 27 further comprising a CAM device which is configured to receive the surface representation as accessed by the processor.

30. (previously presented) A client/server system in which either the client or the server comprises the system of claim 27.

31. (currently amended) A client/server system in which either the client or the server includes the processor readable medium of claim 21~~25~~.

32. (previously presented) A client/server system in which either the client or server includes the memory of claim 24.

33. (currently amended) A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the mesh representations having a limit surface, and the limit surface having a shape, the method comprising the following steps:

a step for subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

a step for determining locations of the vertices of the child polygons;

a step for maintaining boundary vertices of the child polygons on one or more of the boundary curves; and

a step for associating one or more detail vectors with corresponding vertices of the child polygons, at least one of the detail vectors representing the shape of the limit surface at a point corresponding to the associated vertex.

34. (currently amended) ~~A~~The method of claim 33 further comprising ~~subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:~~

~~a step for subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;~~

~~a step for determining locations of the vertices of the child polygons;~~

~~a step for maintaining boundary vertices of the child polygons on one or more of the boundary curves; and~~

~~a step for associating detail vectors with one or more corresponding vertices of the child polygons~~

a step for applying one or more of the detail vectors to adjust the locations of the vertices of the child polygons in the second subdivided mesh representation.

35. (currently amended) A method of subdividing a first mesh representation of an object surface bounded by one or more boundary curves to form a second subdivided mesh representation, the first mesh representation comprising a plurality of tessellated polygons, each of the polygons having one or more vertices, the method comprising the following steps:

a step for subdividing one or more of the polygons into child polygons, each of the child polygons having one or more vertices;

a step for determining locations of the vertices of the child polygons;

a step for maintaining boundary vertices of the child polygons on one or more of the boundary curves; and

a step for applying one or more detail vectors to adjust the locations of one or more vertices of the child polygons in the second subdivided mesh representation.

36. (original) A system comprising:

medium means for tangibly embodying any of the methods of claims 33 and 34; and

processor means for performing any of the methods tangibly embodied by the medium means.

37. (currently amended) A system comprising:

a representation of an object surface comprising

mesh representation means for representing the object surface with a mesh of polygons, the mesh representation means having a limit surface and the limit surface having a shape, and

detail vector means for representing the shape of [[a]]the limit surface at points corresponding to vertices of the mesh representation means;

medium means for tangibly embodying the representation; and

processor means for accessing the representation tangibly embodied by the medium means.

38. (previously presented) A client/server system in which either the client or the server comprises the system of claim 26.

39. (previously presented) A client/server system in which either the client or the server includes the processor readable medium of claim 20.

40. (previously presented) A client/server system in which either the client or server includes the memory of claim 19.